

Introduction

This user guide provides basic information on setting up and running Traffic Analysis. In order to ensure optimum operation of this application, read the material in this user guide before attempting to run Traffic Analysis.

Overview

Traffic Analysis performs the following functions:

- Collects traffic data from a specific system's Meridian 1
- Maintains a database of collected traffic data
- Defines report and graph parameters
- Generates reports to extract significant information from raw traffic data, such as trunk usage, peak periods, process loads and junctor and loop traffic

About this user guide

This user guide is intended as an introduction to the Traffic Analysis application as well as an overview of its major functions. It discusses how you can best use it to manage traffic data and generate meaningful reports.

This user guide does not discuss each Traffic Analysis function and command in detail. It only discusses the major functions and how they are accessed. For detailed information on each Traffic Analysis function and command, use on-line Help. You can use Help to obtain information for topics either directly or via its index and word-search functions. You can obtain context-sensitive help on any topic by simply pressing <F1> during the Traffic Analysis session or by clicking **Help** in the dialog or window in which it appears.

Conventions used in this user guide

This user guide uses the following terms.

- *Computer system* refers to the hardware and software of an IBM-PC™ or 100% compatible PC.
- *Windows* refers to Microsoft Windows 95™.
- *Mouse* refers to any standard PC pointing device. Common mouse actions include *point*, *click*, *right-click* and *double-click*.
- Standard Windows terminology includes: *icon*, *window*, *dialog box* (or *dialog*) and *menu*.
- Angle brackets denote a single keyboard key. For example, <Esc> denotes the Escape key, labeled Esc on PC keyboards. Angle brackets with multiple keys denote keyboard keys to use simultaneously. For example, <Ctrl-Alt-Del> denotes the key sequence for rebooting a PC.
- **This font** is used to designate buttons, menu choices and information you are to enter.

Traffic Analysis system sizing guidelines

System sizing for Traffic Analysis must consider several factors to ensure adequate capacity and throughput to retrieve, store and report on traffic data. The major factors are as follows.

- 1 Does the system have enough free disk space to store and maintain the traffic data?
- 2 Is there sufficient communications bandwidth to perform traffic data collection from all systems in time?
- 3 Does the system have sufficient resources to provide reports on time?

Traffic Database capacity

The size of the Traffic Database varies depending on the Meridian 1. The Traffic Database will also grow rapidly depending on how much data is kept for reporting purposes. Since the active database should normally be archived monthly (thus retaining the previous month's traffic data for reporting as well as updating statistics on the current month), you should expect to store about two months of data in the Traffic Database. Older data should be routinely archived and moved to external storage. Since, however, it will normally be stored transiently on disk as well, you should reserve capacity for the archive operation.

The actual size of the database depends on your specific configuration parameters such as: the number of loops, trunks, consoles, etc.

Use the following example formula to estimate the size of the Traffic Database (including a one-month archive). This example formula assumes that traffic data collection will be scheduled for each hour in the day (i.e., you are not excluding any time for maintenance on the Meridian 1) and that you have 31 days of archived data and 61 days of active data.

24 hours x (61 days + 31 days of archive) = 2208 Traffic Database samples

Thus, you should allow for 2500 samples (this will allow for temporary files used during reporting). Use the following calculation to determine the total bytes required for once (1) Traffic Database sample. Once you have calculated the total bytes for 1 sample, you must then multiply it by the total number of samples.

1 Traffic Database sample =
[(Network Loops x 29) + (Juncture Groups x 17) +
((C/S Links + A/M Links) x 240) + (D-Channels x 115) +
(Multi-Purpose ISDN Signaling Processors x 59) +
(Customers x 424) + (Route Lists x 299) +
(Individual Attendants x 39) + (Network Classes of Service x 35) +
(Incoming Trunk Groups x 35) + etc.]

Communications throughput

The amount of time that it takes a system to collect traffic data depends on the number of systems to collect, the Meridian 1 configuration, the communication line speed and the number of communication ports available on the MAT system.

Traffic data is produced hourly by the Meridian 1. This data is either collected hourly by Traffic Analysis from the Meridian 1 or daily from an optional data buffer device which is connected to the Meridian 1 and stores the hourly data. Once retrieved, the data is compressed by a 4-1 ratio for reporting. Having calculated the size of the database sample, you can calculate the time required to transfer the data. These calculations allow for dialing, connection, logon, traffic data requests, logout and disconnect.

— No buffer device—hourly:

Seconds to Collect Sample = [Setup + (Compression Ratio x Size of Traffic Sample) ÷ Modem Speed]

— With a buffer device—daily:

Seconds to Collect Sample = [Setup + (Hours per Day x Compression Ratio x Size of Traffic Sample) ÷ Modem Speed]

Note: For both cases, allow 40 seconds for setup and allow 85% throughput on modem speed for buffer protocol.

The goal is to ensure that the time required to collect data from all systems, using all available communications paths, is less than the interval between collection cycles. Note that modem speeds are typically rated by baud rate—which roughly translates to bits per second. As a rule of thumb, use 10 bits per byte in calculating modem speed. A 2400 baud modem delivers about 240 bytes per second.

Sample calculation

The following is an example for Traffic Database sizing and a communication throughput estimate:

Switch Option 61 + 2400 baud modem (no buffer device)

7 Network Loops	x 29	= 203
1 Junctor	x 17	= 17
1 Link	x 240	= 240

0 D-Channels	x 115	= 0
0 MISP's	x 59	= 0
1 Customer	x 424	= 424
9 Route Lists	x 299	= 2691
1 Ind. Attendant	x 39	= 39
0 NCOS's	x 35	= 0
2 In. Trunk Groups	x 35	= 70
		3,684 bytes total
Disk Requirements	= 2,500 x 3,684	
	= 9,210,000 bytes (assumes two months on-line)	

Hourly:

$$\begin{aligned}\text{Data Collection Duration} &= 40 + (4 \times 3,684) \div (240 \times 0.85) \\ &= 112 \text{ seconds} = 1:52 \text{ minutes each hour}\end{aligned}$$

Daily:

$$\begin{aligned}\text{Data Collection Duration} &= 40 + (24 \times 4 \times 3,684) \div (240 \times 0.85) \\ &= 1,774 \text{ seconds} = 29:34 \text{ minutes each day}\end{aligned}$$

System resources

The resources required to produce reports are provided by the Windows environment and are affected by activities on the system. System loads use CPU, memory, disk storage and bandwidth. A typical application such as a word processor or electronic mail might generate little CPU load, but might put large demands on memory.

In any Windows environment, memory (RAM) can be extended through the use of virtual memory. Virtual memory allows the PC to use disk space as if it were RAM. Both RAM and virtual memory must be available in sufficient quantity for all concurrent system activities. A shortage of memory will either prevent an application from running or will slow the overall system.

CPU loading depends on the frequency and number of reports. While the system is designed to concurrently generate multiple reports (only for multiple systems), the system runs at maximum throughput when generating one report at a time.

The Windows Print Manager ensures that data from separate reports are not mixed-up on the printer. In order to perform this function, the Print Manager temporarily stores reports on disk (the Print Manager has a backlog limit of 99 print jobs). Therefore the CPU speed, available virtual memory and printer speed dictate the time required to produce the reports and the practical system limits to traffic data throughput.